What is claimed is:

1. A pivoting vane rotary compressor comprising:

a housing having a generally pear-shaped chamber defined by an inner peripheral wall and a pair of opposing side walls on respective sides of said peripheral wall;

a rotor mounted within said chamber to define about said rotor a compression chamber, which narrows from a main chamber region to a constricted chamber region, said rotor having a circumferential surface;

at least one intake port and at least one exhaust port connected communicably with said chamber proximate respective positions wherein said main chamber region and said constricted chamber region intersect, said ports for respectively introducing gas into said chamber and exhausting gas from said chamber;

at least one adjoining pair of curved vanes pivotably attached to said rotor and extending in generally opposite arcuate directions from said rotor into said chamber; and

a motor for rotatably driving said rotor such that both of said adjoining vanes are urged simultaneously against the inner wall of the chamber to define at least one compartment that transmits the gas through said chamber between said intake and exhaust ports and through said main chamber region, whereby gas introduced through a selected one of said ports is compressed and discharged through the other port.

2. The device of claim 1 in which said circumferential surface of said rotor and each said vane have substantially conforming curvatures and said rotor is positioned

within said chamber such that each said vane is driven into substantially flush interengagement with said circumferential surface when said vane is driven by said rotor into said constricted chamber region.

3. The device of claim 1 in which said pair of ports are oriented about said chamber at equal and opposite radial angles relative to a widest portion of said main chamber region.

4. The compressor of claim 1 wherein each compartment gradually expands as the pair of vanes defining said compartment are driven from said constricted region to said main region through the position at which said regions intersect such that a vacuum is drawn in said compartment, which vacuum draws air into said compartment through the port located proximate thereto.

5. The compressor of claim 1 in which said ports comprise a pair of reversible intake and exhaust ports, each port for selectively and alternatively introducing air into said chamber while the other port exhausts air from said chamber and wherein said motor includes a reversible motor for driving said rotor alternatively in opposing first and second directions to transmit in alternating direction through said chamber and between the ports.

6. An oxygen concentrator employing a reversible pivoting vane rotary compressor, said concentrator comprising:

a pair of nitrogen filters;

a reversible pivoting vane rotary compressor that includes a housing having an internal compression chamber defined by an inner wall, a rotor mounted within said chamber to define about said rotor a compression chamber, which narrows from a main chamber region to a constricted chamber region, said rotor having a circumferential

surface, a pair of reversible intake and exhaust ports, each connected communicably and respectively with a respective filter and with said chamber proximate respective positions wherein said main chamber region and said constricted chamber region intersect, each port for selectively and alternately introducing air into said chamber while the other port exhausts air from said chamber, and at least one adjoining pair of curved vanes pivotably attached to said rotor and extending in generally opposite arcuate directions from said circumferential surface of said rotor into said chamber; and

a reversible motor, for rotatably driving said rotor alternately in opposing first and second directions such that both of said adjoining pair of vanes are urged simultaneously against said inner walls of the chamber to define at least one compartment that transmits the air through said chamber between said pair of intake and exhaust ports and through said main chamber region, such that when said rotor is driven in a first forward direction, air is pumped into and through said nitrogen filters to extract nitrogen from the air pumped therethrough and produce concentrated oxygen, and when said rotor is driven in the opposite direction, said extracted nitrogen is exhausted from said filter by said compressor.

7. The device of claim 6 in which said circumferential surface of said rotor and each said vane have substantially conforming curvatures and said rotor is positioned within said chamber such that each said vane is driven into substantially flush interengagement with said circumferential surface when said vane is driven by said rotor into said constricted chamber region.

8. An oxygen concentrator comprising:

two pairs of nitrogen filters;

a first reversible pivoting vane rotary compressor that is communicably connected to said first pair of said filters and a second reversible pivoting vane rotary compressor that is communicably connected to said second pair of said filters, each compressor including a housing having an internal compression chamber defined by an inner wall, a rotor mounted within said chamber to define about said rotor a compression chamber, which narrows from a main chamber region to a constricted chamber region, said rotor having a circumferential surface, a pair of reversible intake and exhaust ports connected communicably with said chamber region proximate a respective position wherein the main chamber region and constricted chamber region intersect, each port connected to a respective filter, each port for selectively and alternately introducing air into said chamber while the other port exhausts air from said chamber, and at least one adjoining pair of curved vanes pivotably attached to said rotor and extending in generally opposite arcuate directions from said rotor into said chamber; and

a motor for rotatably driving said rotors of said first and second compressors alternately in opposing first and second directions such that in each said compressor, both of said adjoining vanes are urged simultaneously against the inner wall of the chamber to define at least one compartment that transmits the air through said chamber between said pair of intake and exhaust ports and through said main chamber region such that air introduced through one of said ports is compressed and discharged through the other port; whereby said motor drives said first compressor in a forward direction to pump air into and through a first one of said first pair of filters while simultaneously driving said second

compressor in a reverse direction to evacuate a first one of said second pair of filters, and alternately drives said first compressor in a reverse direction to evacuate the second filter of said first pair of filters while simultaneously driving said second compressor in a forward direction to pump air into and through the second filter of the second pair of filters.

9. The device of claim 8 in which said circumferential surface of said rotor and each said vane have substantially conforming curvatures and said rotor is positioned within said chamber such that each said vane is driven into substantially flush interengagement with said circumferential surface when said vane is driven by said rotor into said constricted chamber region.

10. The device of claim 6 further including a cabinet for enclosing said compressor and said motor, said cabinet having an opening for introducing air into and removing air from said cabinet, and further comprising a filter engaged with said opening.

11. The device of claim 8 in which at least two of said filters have different sizes.

12. The device of claim 6 in which said filters have different sizes.

13. The device of claim 1 further including a shield assembly attached to and extending radially beyond the circumference of said rotor for shielding longitudinal edges of said vanes from side walls of said chamber.

14. The device of claim 8 in which said compression chamber has a generally pear-shaped peripheral configuration including wide and narrow peripheral wall segments.

15. The device of claim 8 further including at least one conduit for communicably connecting said first compressor and its connected filters to said second compressor and

its connected filters and a crossover valve for selectively directing airflow through said conduit and between said compressor and their respective attached filters.

16. A pivoting vane rotary compressor comprising:

a housing having a compression chamber defined by an inner peripheral wall and a pair of opposing side walls on respective sides of said peripheral wall;

a rotor mounted within said chamber to define about said rotor a compression chamber, which narrows from a main chamber region to a constricted chamber region, said rotor having a circumferential surface;

at least one intake port and at least one exhaust port connected communicably with said chamber proximate respective positions wherein said main chamber region and said constricted chamber region intersect, said ports for respectively introducing gas into said chamber and exhausting gas from said chamber;

at least one adjoining pair of curved vanes pivotably attached to said rotor and extending in generally opposite arcuate directions from said rotor into said chamber;

a protective shield attached to and extending diametrically outwardly from said rotor on either side of each said vane for shielding said vanes from said side walls of said chamber; and

a motor for rotatably driving said rotor such that both of said adjoining vanes are urged simultaneously against the inner wall of the chamber to define at least one compartment that transmits the gas through said chamber between said intake and exhaust ports and through said main chamber region, whereby gas introduced through a selected one of said ports is compressed and discharged through the other port.

17. The device of claim 16 in which said peripheral wall has a generally pear-shaped peripheral configuration including wide and narrow peripheral wall segments.

18. The device of claim 6 further including a valve for bleeding room air into at least one of said filters independently of said compressor connected thereto.

19. The device of claim 6 in which said compression chamber has a generally pear-shaped peripheral configuration including wide and narrow peripheral wall segments.